

CLAIMS

1. A coated article including a multi-layer coating supported by a glass substrate, the multi-layer coating comprising, from the glass substrate outwardly:
 - a layer comprising titanium oxide;
 - a layer comprising tin oxide located over and contacting the layer comprising titanium oxide;
 - a layer comprising silicon nitride located over and contacting the layer comprising tin oxide;
 - a contact layer;
 - a layer comprising silver located over and contacting the contact layer;
 - a dielectric layer comprising a metal oxide;
 - another layer comprising silver; and
 - another dielectric layer.
2. The coated article of claim 1, wherein the coated article is heat treated and has a ratio T_{vis}/R_s of at least 25 after heat treatment (where T_{vis} is visible transmission (%) and R_s is sheet resistance of the coating in units of ohms/square) and a ΔE^* value (glass side reflective and/or transmissive) of less than or equal to about 8 due to the heat treatment.
3. The coated article of claim 2, wherein the coated article has a ratio T_{vis}/R_s of at least 30 after heat treatment.

4. The coated article of claim 1, wherein the layer comprising titanium oxide is located directly on the glass substrate so as to contact the glass substrate.
5. The coated article of claim 1, wherein the contact layer comprises zinc oxide.
6. The coated article of claim 1, wherein the layer comprising silicon nitride is Si-rich and has an index of refraction "n" of at least 2.10.
7. The coated article of claim 1, wherein the layer comprising silicon nitride is Si-rich and has an index of refraction "n" of from 2.15 to 2.25.
8. The coated article of claim 1, wherein the coated article comprises a laminated vehicle windshield.
9. The coated article of claim 1, wherein the layer comprising titanium oxide is from 20 to 100 Å thick, the layer comprising tin oxide is from 20 to 100 Å thick, and the layer comprising silicon nitride is from 50 to 450 Å thick.
10. The coated article of claim 1, wherein the coated article has a sheet resistance (R_s) of less than or equal to 4.0.

11. The coated article of claim 1, wherein the coated article is heat treated and has a ΔE^* value (glass side reflective and/or transmissive) of less than or equal to about 5 due to the heat treatment.

12. The coated article of claim 11, wherein the coated article has a ΔE^* value (glass side reflective and/or transmissive) of less than or equal to about 4 due to the heat treatment.

13. The coated article of claim 1, wherein an overall combined thickness of the layer comprising titanium oxide, the layer comprising tin oxide and the layer comprising silicon nitride is no greater than 400 Å.

14. The coated article of claim 1, wherein an overall combined thickness of the layer comprising titanium oxide, the layer comprising tin oxide and the layer comprising silicon nitride is no greater than 350 Å.

15. The coated article of claim 1, wherein said layer comprising silicon nitride is Si-rich and comprises Si_xN_y , where x/y is from 0.8 to 1.0.

16. The coated article of claim 1, wherein the coated article is a laminated vehicle windshield and is heat treated.

17. The coated article of claim 1, wherein the contact layer comprising zinc oxide, and wherein at least one of the layer comprising silicon nitride and the layer comprising zinc oxide further includes aluminum or other metal(s).

18. The coated article of claim 1, wherein the coated article includes the following layers from the glass substrate outwardly:

the layer comprising titanium oxide;

the layer comprising tin oxide;

the layer comprising silicon nitride;

the contact layer, wherein the contact layer comprises zinc oxide and is located directly on and contacting the layer comprising silicon nitride;

the layer comprising silver located over and contacting the contact layer comprising zinc oxide;

a layer comprising at least one metal oxide;

a dielectric layer which comprises tin oxide;

a dielectric layer comprising silicon nitride;

a layer comprising zinc oxide;

another layer comprising silver;

a dielectric layer comprising a metal oxide; and

another dielectric layer comprising silicon nitride.

19. The coated article according to claim 1, wherein the coated article comprises a laminated vehicle windshield and has a transmissive haze value of no greater than 0.4.

20. The coated article according to claim 1, wherein the coated article comprises a laminated vehicle windshield and has a transmissive haze value of no greater than 0.35, and a total solar (TS) value of no greater than 46.

21. The coated article according to claim 1, wherein the layer comprising tin oxide further comprises from 2 to 25% nitrogen.

22. The coated article of claim 1, characterized in that when the coated article is exposed to about 650 degrees C of heat treatment for 12 minutes the coated article retains at least 98% of its pre-heat-treatment visible transmission.

23. A heat treatable coated article including a multi-layer coating supported by a glass substrate, the multi-layer coating comprising:

a layer comprising tin oxide located directly between and contacting each of a layer comprising titanium oxide and a layer comprising silicon nitride;

at least one layer comprising silver located over the layer comprising tin oxide; and

when the coated article is exposed to about 650 degrees C of heat treatment for 12 minutes as a reference, the coated article retains at least 98% of its pre-heat-treatment visible transmission.

24. The coated article of claim 23, wherein the coated article is heat treated and has a ratio T_{vis}/R_s of at least 25 after heat treatment (where T_{vis} is visible transmission (%) and R_s is sheet resistance of the coating in units of ohms/square) and

a ΔE^* value (glass side reflective and/or transmissive) of less than or equal to about 8 due to the heat treatment.

25. The coated article of claim 23, wherein the coated article has a ratio T_{vis}/R_s of at least 30 after heat treatment.

26. The coated article of claim 23, wherein the coated article is a laminated and heat treated vehicle windshield.

27. The coated article of claim 23, wherein the layer comprising silicon nitride is Si-rich and has an index of refraction "n" of from 2.15 to 2.25.

28. A heat treatable coated article including a multi-layer coating supported by a glass substrate, the multi-layer coating comprising:

a layer one dielectric layer;

first and second layers comprising silver spaced apart from one another by at least one metal oxide inclusive layer;

another dielectric layer provided over both of the first and second layers comprising silver; and

when the coated article is exposed to about 650 degrees C of heat treatment for 12 minutes as a reference, the coated article retains at least 98% of its pre-heat-treatment visible transmission.

29. The coated article of claim 28, wherein the coated article is heat treated and has a ratio T_{vis}/R_s of at least 25 after heat treatment (where T_{vis} is visible transmission (%) and R_s is sheet resistance of the coating in units of ohms/square) and a ΔE^* value (glass side reflective and/or transmissive) of less than or equal to about 8 due to the heat treatment.

30. The coated article of claim 29, wherein the coated article has a ratio T_{vis}/R_s of at least 30 after heat treatment.

31. The coated article of claim 28, wherein the coated article comprises a layer comprising tin oxide located between and contacting a layer comprising titanium oxide and a layer comprising silicon nitride.

32. The coated article of claim 28, wherein the layer comprising tin oxide is located beneath both of the layers comprising silver.